Federal Communications Commission
Washington, D. C. 20554

Approved by OMB
3060-0627
Expires 01/31/98

FOR FCC USE ONLY

FCC 302-AM

APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.)

FOR COMMISSION USE ONLY
FILE NO. BMML-20110126AEC

SECTION I - APPLICANT FEE INFORMATION

1. PAYOR NAME (Last, First, Middle Initial)

KDRY Radio, Inc.

MAILING ADDRESS (Line 1) (Maximum 35 characters)
16414 San Pedro Avenue

MAILING ADDRESS (Line 2) (Maximum 35 characters)
Suite 575

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
San Antonio	Texas	78232

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
(210)545-1100	KDRY	

2. A. Is a fee submitted with this application? [X] Yes [ ] No

B. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1112).

[ ] Governmental Entity [ ] Noncommercial educational licensee [ ] Other (Please explain):

C. If Yes, provide the following information:

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in the "Mass Media Services Fee Filing Guide." Column (B) lists the Fee Multiple applicable for this application. Enter fee amount due in Column (C).

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
MMR	0001	$ 615.00	

To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)	(B)	(C)	FOR FCC USE ONLY
MOR	0001	$ 705.00	

	TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.	$ 1,320.00	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT KDRY Radio, Inc.		
MAILING ADDRESS 16414 San Pedro Avenue, Suite 575		
CITY San Antonio	STATE Texas	ZIP CODE 78232

2. This application is for:

☒ Commercial ☐ Noncommercial

☒ AM Directional ☐ AM Non-Directional

Call letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of Last Construction Permit
KDRY	Alamo Heights, TX			

3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

☐ Yes ☒ No

If No, explain in an Exhibit.

Exhibit No. DNA

4. Have all the terms, conditions, and obligations set forth in the above described construction permit been fully met?

☐ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No. DNA

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction which would result in any statement or representation contained in the construction permit application to be now incorrect?

☐ Yes ☒ No

If Yes, explain in an Exhibit.

Exhibit No. DNA

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)?

☒ Yes ☐ No ☐ Does not apply

If No, explain in an Exhibit.

Exhibit No.

7. Has an adverse finding been made or an adverse final action been taken by any court or administrative body with respect to the applicant or parties to the application in a civil or criminal proceeding, brought under the provisions of any law relating to the following: any felony; mass media related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination?

☐ Yes ☒ No

If the answer is Yes, attach as an Exhibit a full disclosure of the persons and matters involved, including an identification of the court or administrative body and the proceeding (by dates and file numbers), and the disposition of the litigation. Where the requisite information has been earlier disclosed in connection with another application or as required by 47 U.S.C. Section 1.65(c), the applicant need only provide: (i) an identification of that previous submission by reference to the file number in the case of an application, the call letters of the station regarding which the application or Section 1.65 information was filed, and the date of filing; and (ii) the disposition of the previously reported matter.

Exhibit No. DNA

8. Does the applicant, or any party to the application, have a petition on file to migrate to the expanded band (1605 - 1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination (pursuant to the 5 year holding period allowed) with the AM facility proposed to be modified herein?

☐ Yes ☒ No

If Yes, provide particulars as an Exhibit.

Exhibit No.
DNA

The APPLICANT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because use of the same, whether by license or otherwise, and requests and authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended).

The APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as set out in full in the application.

CERTIFICATION

1. By checking Yes, the applicant certifies, that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

☒ Yes ☐ No

2. I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Name	Signature	
Diana L. Morris	Diana Morris	
Title	Date	Telephone Number
President	January 20, 2011	(210) 545-1100

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503)

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to determine whether grant of the application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. In addition, all information provided in this form will be available for public inspection. If information requested on the form is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Your response is required to obtain the requested authorization.

Public reporting burden for this collection of information is estimated to average 639 hours and 53 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0627), Washington, D. C. 20554. Do NOT send completed forms to this address.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

FCC FORM 302-AM, SECTION III

APPLICATION FOR STATION LICENSE
(Method of Moments Proof)

RADIO STATION KDRY
(Facility ID # 47666)

KDRY RADIO, INC.

1100 kHz, 1.0/11.0 kW, DA-N

ALAMO HEIGHTS, TEXAS

JANUARY, 2011

WILLOUGHBY & VOSS
BROADCAST TECHNICAL CONSULTANTS
P.O. BOX 701190
SAN ANTONIO, TEXAS 78270-1190
(210) 525-1111

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
KDRY Radio, Inc.

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

MoM Proof

☒ Station License ☐ Direct Measurement of Power

1. Facilities authorized in construction permit					
Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
KDRY		1100	Unlimited	1.0	11.0

2. Station location	
State	City or Town
Texas	Alamo Heights

3. Transmitter location			
State	County	City or Town	Street address (or other identification)
Texas	Bexar	San Antonio	13010 Lookout Rd.

4. Main studio location			
State	County	City or Town	Street address (or other identification)
Texas	Bexar	San Antonio	16414 San Pedro #575

5. Remote control point location (specify only if authorized directional antenna)			
State	County	City or Town	Street address (or other identification)
Texas	Bexar	San Antonio	16414 San Pedro #575

6. Has type-approved stereo generating equipment been installed? ☐ Yes ☒ No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? ☒ Yes ☐ No

☐ Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed. Exhibit No. narrative

8. Operating constants:	
RF common point or antenna current (in amperes) without modulation for night system 4.65	RF common point or antenna current (in amperes) without modulation for day system 14.60
Measured antenna or common point resistance (in ohms) at operating frequency Night 50.0 Day 51.7	Measured antenna or common point reactance (in ohms) at operating frequency Night -8.0 Day +66.1

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1 (NE)	0.0		1.000			
2 (SW)	-138.9		0.960			

Manufacturer and type of antenna monitor: Potomac Instruments Model 1901-3, Serial # 778

SECTION III - Page 2

9. Description of antenna system (If directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.) ASRN T1: 1023225, T2: 1023226

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
uniform cross-section, guyed, steel towers.	T1= 67.8, T2= 65.9	T1= 67.8, T2= 65.9	T1= 68.4, T2= 66.5	Exhibit No. DNA

Excitation [X] Series [ ] Shunt

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude				West Longitude			
	29 °	33 '	28 "		98 °	22 '	32 "

If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Exhibit No. narrative

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. Exhibit No.

10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

Does Not Apply

11. Give reasons for the change in antenna or common point resistance.

The STL receiving antenna and STL iso-coupler were replaced.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type)	Signature (check appropriate box below)
Lyndon H. Willoughby	Lyndon H. Willoughby
Address (include ZIP Code)	Date
Willoughby & Voss, LLC. P.O. Box 701190 San Antonio, Texas 78270-1190	January 20, 2011
	Telephone No. (Include Area Code)
	(210) 525-1111 email: willvoss@satx.rr.com

[ ] Technical Director

[ ] Registered Professional Engineer

[ ] Chief Operator

[X] Technical Consultant

[ ] Other (specify)

KDRY Radio, INC.
KDRY RADIO
1100 kHz, 1.0/11.0 kW, DA-N
ALAMO HEIGHTS, TEXAS
JANUARY, 2011

APPLICATION FOR STATION LICENSE
(Method of Moments Proof)

FCC Form 302, Section III

Technical Summary Statement

Exhibits:

1. Verification of Method of Moments Model
2. DA-Night Operating Parameter Determination
3. Details of Model for Towers Individually Driven
4. Detail of Model for DA-NIGHT
5. Sample System Measurements
6. Reference Field Strength Measurements
7. Direct Measurement of Power
8. Antenna Monitor and Sample System
9. Radio Frequency Radiation Considerations
10. Statement Regarding As-Built Array Geometry

KDRY - Technical Summary Statement

These technical exhibits support an application for station license for radio station KDRY, Alamo Heights, Texas. KDRY operates on 1100 kHz, with a daytime non-directional power of 11.0 kW and nighttime directional power of 1.0 kW.

Information is provided herein demonstrating that the directional antenna parameters for the nighttime pattern have been determined in accordance with the requirements of Section 73.151(c) of the FCC Rules. The system has been adjusted to produce antenna monitor parameters within +/- 5 percent in ratio and +/- 3 degrees in phase of the modeled values, as required by the Rules.

Lyndon H. Willoughby

Lyndon H. Willoughby
Willoughby & Voss, LLC.
January 20, 2011

KDRY - Verification of Method of Moments Model - Exhibit 1

The base impedance of each tower was measured with a Hewlett-Packard 8753C network analyzer and a Tunwall Radio directional coupler, in a calibrated measurement system.

The measurement point and the open circuit point ("Reference Point"), was at the normal mounting location of the toroidal transformer (removed for calibration measurements). The RF current travels on copper tubing through the ATU bowl insulator and is connected to the tower. The shunt components between the "Reference Point" and each tower base are as follows:

Tower 1 (NE) - the feedline inductance (+j 24.2 ohms) is in series with a parallel shunt circuit made up of a high impedance (+j 5.30 kohm) tower lighting choke, a Kintronic Labs Model FMC-0.2P, STL iso-coupler (manufacturer's value 64 pF) and the distributed capacitance of the base insulator (45 pF) which results in a net reactance of +j 2,693.28 ohms.

Tower 2 (SW) - the feedline inductance (+j 24.1 ohms) is in series with a paralled shunt circuit made up of a high impedance (+j 5.3 kohm) tower lighting choke and the distributed capacitance of the base insulator (45 pF) and results in a net lumped load reactance of -j 2,001.21 ohms.

Due to the high impedance of these components, they exhibited little effect on the circuit impedance but were included in the process of calibrating the method of moments model ("model") to converge with the measured self impedances.

The following pages show the calculation of circuits which were performed to relate the model impedances of the tower feedpoints to the Reference Point measured impedances. Westberg Circuit Analysis Program ("WCAP"), was used to calculate values for the assumed circuit.

In the Tower 1 WCAP tabulation, node 1 represents the ATU Reference Point and node 3 represents the feedpoint of the tower. Ground potential is represented by node 0.

The calculated Reference Point impedance is shown below "TO IMPEDANCE" on line R 2>1 following the phantom 1.0 ohm resistor that was included in series with the drive current sources (I 0 2), to provide calculation points for the impedances. The tower feedpoint impedance from the method of moments model is represented by a complex load from node 3 to ground (R 3>0). The assumed stray capacitance, the isocoupler capacitance and the inductance of lighting choke for Tower 1 appears at C 3>0 and L 1>0 on the WCAP printout. The combined equivalent circuit appears as the lumped load on the model with the net values stated above.

In the Tower 2 WCAP tabulation, node 2 represents the ATU Reference Point and node 1 represents the feedpoint of the tower. Ground potential is represented by node 0.
The calculated Reference Point impedance is shown below "TO IMPEDANCE" on line R 3>2 following the phantom 1.0 ohm resistor that was included in series with the drive current sources (I 0 1), to provide calculation points for the impedances. The tower feedpoint impedance from the method of moments model is represented by a complex load from diagram node 1 to ground (tabulation R 1>0). The assumed stray capacitance and the inductance of lighting choke for Tower 2 appears at C 1>0 and L 2>0 on the WCAP printout. The combined equivalent circuit appears as the lumped load on the model with the net values stated above.

The modeled and measured self-impedance at the ATU Reference Points, with the other tower open circuited at its Reference Point, agree within the +/-2 ohms and +/- 4% (resistance and reactance), as required by the FCC Rules.

WCAP - KDRY T1 OC Self

WCAP OUTPUT AT FREQUENCY: 1.100 MHz

NODE VOLTAGES

Node:	1	84.1014 ∠	51.8248° V
Node:	2	84.7231 ∠	51.2932° V
Node:	3	67.1544 ∠	38.9608° V

	WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
R	3→0	49.98500000	67.15 ∠ 38.961° V	1.02 ∠ -1.659° A
R	2→1	1.00000000	1.00 ∠ 0.000° V	1.00 ∠ 0.000° A
L	1→3	3.49996000	23.89 ∠ 90.569° V	0.99 ∠ 0.569° A
L	1→0	766.83700000	84.10 ∠ 51.825° V	0.02 ∠ -38.175° A
C	3→0	0.00004500	67.15 ∠ 38.961° V	0.02 ∠ 128.961° A
C	3→0	0.00006400	67.15 ∠ 38.961° V	0.03 ∠ 128.961° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
R	3→0	49.98500000	49.98 + j 42.873	0.00 + j 0.000
R	2→1	1.00000000	52.98 + j 66.114	51.98 + j 66.114
L	1→3	3.49996000	53.30 + j 66.420	53.30 + j 42.230
L	1→0	766.83700000	-0.00 + j 5299.997	0.00 + j 0.000
C	3→0	0.00004500	0.00 - j 3215.251	0.00 + j 0.000
C	3→0	0.00006400	0.00 - j 2260.724	0.00 + j 0.000

TCT Ref Pt.
msrd 51.7 +j 66.1

	WCAP PART	VSWR

WCAP INPUT DATA:

```
      1.1000       0.00000000   0
I       1.00000000   0   2       0.00000000
R      49.98500000   3   0      42.87300000
R       1.00000000   2   1       0.00000000
L       3.49996000   1   3       0.00000000
L     766.83700000   1   0       0.00000000
C       0.00004500   3   0
C       0.00006400   3   0
```

WCAP - KDRY T2 OC Self

WCAP OUTPUT AT FREQUENCY: 1.100 MHz

NODE VOLTAGES

Node:	1	56.7364 ∠	35.9516° V
Node:	2	73.1709 ∠	51.3285° V
Node:	3	73.7998 ∠	50.7223° V

	WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
R	3→2	1.00000000	1.00 ∠ 0.000° V	1.00 ∠ 0.000° A
L	2→0	766.83700000	73.17 ∠ 51.328° V	0.01 ∠ -38.672° A
L	2→1	3.48361000	23.82 ∠ 90.500° V	0.99 ∠ 0.500° A
C	1→0	0.00004500	56.74 ∠ 35.952° V	0.02 ∠ 125.952° A
R	1→0	45.75800000	56.74 ∠ 35.952° V	1.00 ∠ -0.324° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
R	3→2	1.00000000	46.72 + j 57.127	45.72 + j 57.127
L	2→0	766.83700000	0.00 + j 5299.997	0.00 + j 0.000
L	2→1	3.48361000	46.72 + j 57.343	46.72 + j 33.266
C	1→0	0.00004500	0.00 - j 3215.251	0.00 + j 0.000
R	1→0	45.75800000	45.76 + j 33.583	0.00 + j 0.000

TCT Ref Pt.
msrd 45.6 +j 57.1

	WCAP PART	VSWR

WCAP INPUT DATA:

1.1000 0.00000000 0

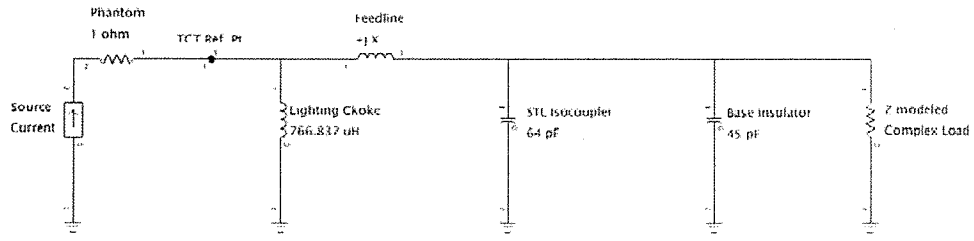
I	1.00000000	0	3	0.00000000
R	1.00000000	3	2	0.00000000
L	766.83700000	2	0	0.00000000
L	3.48361000	2	1	0.00000000
C	0.00004500	1	0	
R	45.75800000	1	0	33.58300000

VERIFICATION OF METHOD OF MOMENTS MODEL

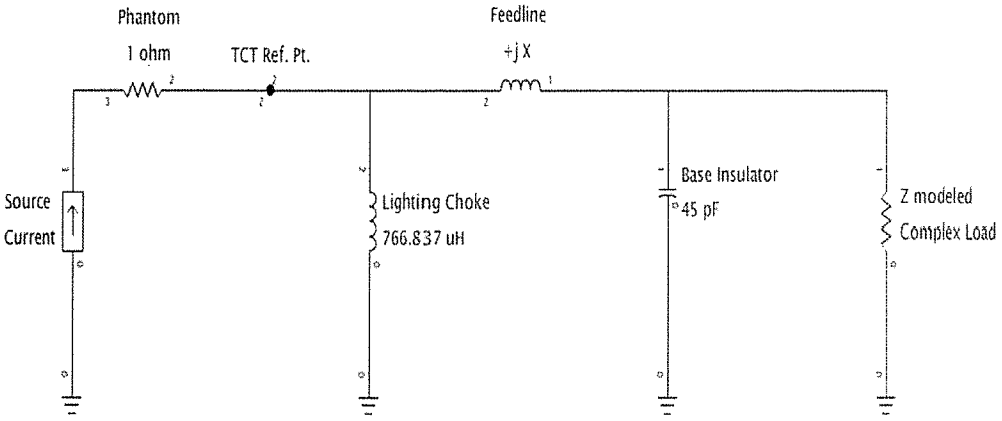
KDRY, 1100 kHz, 1.0/11.0 kW, DA-N

Alamo Heights, Texas

Tower 1



Tower 2



(Feedlines, Chokes & Strays combined as Xoc)

TWR	L(uH)	XL	Xoc	Z modeled Twr	Z ATU (model)	Z ATU (msrd)
1	3.4999	+j 24.19	+j 2,693	49.985 +j 42.873	51.98 +j 66.114	51.7 +j 66.10
2	3.4836	+j 24.08	-j 2,001	45.758 +j 33.583	45.72 +j 57.127	45.6 +j 57.10

KDRY - DA-NIGHT Operating Parameter Determination - Exhibit 2

After converging the model with the measured open-circuit self impedance for each tower in the array, the model was used to make the directional antenna calculations.

The model calculated the voltage values for the source point of each tower in the array, as well as the tower currents. The summation of current moments, when normalized, equate to the theoretical field parameters which produce the directional pattern.

The ATU output currents were calculated using WCAP nodal analysis. WCAP input data consists of:

- Tower currents calculated using the method of moments model for the directional antenna.
- Tower operating impedances calculated by the method of moments for the directional antenna. In WCAP these are treated as a complex load from T1 node 3 to ground and for T2 node 1 to ground.
- The circuit values which were derived from analysis of the measured open-circuit self impedances.

The WCAP nomenclature, in the following tabulations are defined as:

- T1 Node 1 is the ATU Reference Point (where the TCT sampler is located).
- T2 Node 2 is the ATU Reference Point.
- T1 Node 3 and T2 Node 1 are the tower feedpoints.
- Node 0 is ground potential.
- T1 Node 2>3 and T2 Node 3>2 are phantom 1.0 ohm resistors.
- T1 Node 1>3 and T2 Node 2>1 are the assumed series reactance.
- T1 Node 3>0 is both the assumed shunt capacitance of base insulator isocoupler & the resistor that represents the complex load presented by the tower. Node 1>0 is the lighting choke.
- T2 Node 1>0 is the assumed shunt capacitance of base insulator and the resistor that represents the complex load presented by the tower. Node 2>0 is the lighting choke.
- "TO IMPEDANCE" is the impedance from one node to the following node.

Since the TCT samplers and the sampling lines are near identical, the antenna monitor ratios and phases corresponding to the theoretical parameters were calculated directly from the modeled ATU currents.

KDRY - DA-NIGHT Operating Parameter Determination - Exhibit 2
KDRY, 1100 kHz, 1.0/11.0 kW, DA-N
Alamo Heights, Texas

TOWER	Modeled Current Node	Current Magnitude @ TCT in amps	Current Phase @ TCT in degrees	Antenna Monitor Ratio	Antenna Monitor Phase in deg
1(NE)	1	5.56	+2.7	1.000	0.0
2(SW)	11	5.34	+223.8	0.960	-138.9

WCAP - KDRY T1 DA-Night

WCAP OUTPUT AT FREQUENCY: 1.100 MHz

NODE VOLTAGES

Node:	1	266.4111 ∠	71.4231° V
Node:	2	268.4787 ∠	70.3174° V
Node:	3	150.4352 ∠	52.4922° V

	WCAP PART		CURRENT IN		CURRENT OUT	
	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
R	3→0	17.14000000	150.44 ∠	52.492° V	5.60 ∠	2.138° A
R	2→1	1.00000000	5.56 ∠	2.700° V	5.56 ∠	2.700° A
L	1→3	3.49996000	133.36 ∠	92.890° V	5.51 ∠	2.890° A
L	1→0	766.83700000	266.41 ∠	71.423° V	0.05 ∠	-18.577° A
C	3→0	0.00004500	150.44 ∠	52.492° V	0.05 ∠	142.492° A
C	3→0	0.00006400	150.44 ∠	52.492° V	0.07 ∠	142.492° A

TCT Ref Pt.

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE	
R	3→0	17.14000000	17.14 + j	20.685	0.00 + j	0.000
R	2→1	1.00000000	18.39 + j	44.650	17.39 + j	44.650
L	1→3	3.49996000	17.68 + j	44.970	17.68 + j	20.780
L	1→0	766.83700000	0.00 + j	5299.997	0.00 + j	0.000
C	3→0	0.00004500	0.00 - j	3215.251	0.00 + j	0.000
C	3→0	0.00006400	0.00 - j	2260.724	0.00 + j	0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.1000	0.00000000	0	
I	5.56000000	0	2	2.70000000
R	17.14000000	3	0	20.68500000
R	1.00000000	2	1	0.00000000
L	3.49996000	1	3	0.00000000
L	766.83700000	1	0	0.00000000
C	0.00004500	3	0	
C	0.00006400	3	0	

WCAP - KDRY T2 DA-Night

WCAP OUTPUT AT FREQUENCY: 1.100 MHz

NODE VOLTAGES

Node:	1	365.1060 ∠	-60.0994° V
Node:	2	488.6650 ∠	-56.4921° V
Node:	3	489.6473 ∠	-57.1070° V

	WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT	
R	3→2	1.00000000	5.34 ∠ -136.200° V	5.34 ∠ -136.200° A	TCT Ref Pt.
L	2→0	766.83700000	488.67 ∠ -56.492° V	0.09 ∠ -146.492° A	
L	2→1	3.48361000	126.39 ∠ -46.020° V	5.25 ∠ -136.020° A	
C	1→0	0.00004500	365.11 ∠ -60.099° V	0.11 ∠ 29.901° A	
R	1→0	16.23100000	365.11 ∠ -60.099° V	5.36 ∠ -136.316° A	

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
R	3→2	1.00000000	17.35 + j 90.038	16.35 + j 90.038
L	2→0	766.83700000	0.00 + j 5299.997	0.00 + j 0.000
L	2→1	3.48361000	16.92 + j 91.541	16.92 + j 67.464
C	1→0	0.00004500	0.00 - j 3215.251	0.00 + j 0.000
R	1→0	16.23100000	16.23 + j 66.161	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.1000	0.00000000	0	
I	5.34000000	0	3	223.80000000
R	1.00000000	3	2	0.00000000
L	766.83700000	2	0	0.00000000
L	3.48361000	2	1	0.00000000
C	0.00004500	1	0	
R	16.23100000	1	0	66.16100000

KDRY - Details of Model for Towers Individually Driven - Exhibit 3

Using Expert MININEC Broadcast Professional, Version 14.5, the KDRY two tower array was modeled. Each tower was represented by one wire. The top and bottom wire end points were specified using electrical degrees for the frequency of 1100 kHz. Each tower wire was modeled based on 10 wire segments. The towers are physically 89.6 and 87.0 electrical degrees in height, respectively and the segment length is between 9.30 and 9.52 electrical degrees.

The characteristics (height & radius) were adjusted until the modeled resistance approximately matched the measured resistance. Final adjustment to converge the model was made based on the introduction of a circuit model which consists of branches representing feedline inductances and stray capacitances. The base impedances were measured at the normal location of the current sampling TCTs (Reference Point) with the other tower opened circuited at its respective Reference Point. The method of moments model assumed loads at ground level having the reactances that were calculated for each case using the base circuit models for the open circuited towers of the array.

The modeled heights relative to the physical heights of the individual towers is within the specified range of 75% to 125%. The modeled radius is within the specified range of 80% to 150% of the cylindrical radius that represents the circumference equal to the sum of the tower face width. KDRY uses towers of uniform cross-section, triangular shape having face widths of ; T1 = 18 inches and T2 = 12 inches. The physical tower radii are T1 = .198 m. And T2 = .132 m.

TOWER	Physical Height (deg)	Modeled Height (deg)	Modeled % of Height	Modeled Radius (m)	%Equivalent Radius
1(NW)	89.6	95.2	106.25	0.27	136.4
2(SE)	87.0	93.0	106.90	0.18	136.4

The following pages show the method of moments model details of the individually driven towers.

KDRY Tower 1 Self (other tower OC)

KDRY MoM

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.27	10
		0	0	95.2		
2	none	45.	225.	0	.198	10
		45.	225.	93.		

Number of wires = 2
current nodes = 20

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	2	9.3	1	9.52
radius	2	.198	1	.27

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.1	0	1	.0258333	.0264444

Sources

source	node	sector	magnitude	phase	type
1	1	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	11	0	-2,001.21	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.1	49.985	42.873	65.852	40.6	2.3008	-8.0881	-.73302

KDRY Tower 2 Self (other tower OC)

KDRY MoM

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.27	10
		0	0	95.2		
2	none	45.	225.	0	.18	10
		45.	225.	93.		

Number of wires = 2
current nodes = 20

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	2	9.3	1	9.52
radius	2	.18	1	.27

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.1	0	1	.0258333	.0264444

Sources

source	node	sector	magnitude	phase	type
1	11	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	2,693.28	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 11, sector 1							
1.1	45.758	33.583	56.759	36.3	2.0011	-9.5362	-.5123

KDRY - Details of Model for DA-NIGHT - Exhibit 4

Using Expert MININEC Broadcast Professional, Version 14.5, with the individual tower's characteristics that were verified by the individual tower impedance measurements, calculations were made to determine the complex voltage values for sources located at ground level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern.

Tower	Wire	Base Node
1(NE)	1	1
2(SW)	2	11

It should be noted that voltages and currents shown on the tabulations that are not specified as "rms" values are the corresponding peak values.

KDRY Full Nighttime Model

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.1 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	1.	-137.5

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	150.358	52.5	5.59721	2.1
11	363.849	300.1	5.34106	223.8

Sum of square of source currents = 119.712

Total power = 1,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00537317	-.0123776
Y(1, 2)	.00332772	.0095866
Y(2, 1)	.00332703	.00958717
Y(2, 2)	.00768444	-.0140177

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	50.2322	43.8252
Z(1, 2)	42.0238	-4.98607
Z(2, 1)	42.0221	-4.98939
Z(2, 2)	45.6166	32.9454

KDRY Full Nighttime Model

KDRY DA-Night

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.27	10
		0	0	95.2		
2	none	45.	225.	0	.18	10
		45.	225.	93.		

Number of wires = 2
current nodes = 20

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	2	9.3	1	9.52
radius	2	.18	1	.27

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.1	0	1	.0258333	.0264444

Sources

source	node	sector	magnitude	phase	type
1	1	1	212.639	52.5	voltage
2	11	1	514.56	300.1	voltage

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.1	17.14	20.685	26.863	50.4	3.4712	-5.1503	-1.5831
source = 2; node 11, sector 1							
1.1	16.231	66.161	68.123	76.2	8.6834	-2.0095	-4.3131

CURRENT rms
Frequency = 1.1 MHz
Input power = 1,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	5.59721	2.1	5.59343	.205637
2	0	0	9.52	5.63224	1.3	5.63089	.123282
3	0	0	19.04	5.49703	.7	5.49662	.0669325
4	0	0	28.56	5.21629	.2	5.21625	.0204872
5	0	0	38.08	4.79953	359.8	4.7995	-.0173485
6	0	0	47.6	4.25765	359.4	4.2574	-.0462649
7	0	0	57.12	3.60351	359.	3.60292	-.0652208
8	0	0	66.64	2.85117	358.5	2.85024	-.0727045
9	0	0	76.16	2.01344	358.1	2.01234	-.0668148
10	0	0	85.68	1.09467	357.6	1.09374	-.0451393
END	0	0	95.2	0	0	0	0
GND	-31.8198	31.8198	0	5.34108	223.8	-3.85236	-3.69952
12	-31.8198	31.8198	9.3	5.54327	223.2	-4.04246	-3.79293
13	-31.8198	31.8198	18.6	5.51886	222.8	-4.05068	-3.74831
14	-31.8198	31.8198	27.9	5.32025	222.5	-3.92321	-3.59353
15	-31.8198	31.8198	37.2	4.96056	222.3	-3.67082	-3.3365
16	-31.8198	31.8198	46.5	4.45163	222.1	-3.30282	-2.9847

17	-31.8198	31.8198	55.8	3.80647	222.	-2.82942	-2.54629
18	-31.8198	31.8198	65.1	3.03905	221.9	-2.26174	-2.02986
19	-31.8198	31.8198	74.4	2.16198	221.9	-1.61006	-1.44287
20	-31.8198	31.8198	83.7	1.17906	221.9	-.878224	-.786711
END	-31.8198	31.8198	93.	0	0	0	0

KDRY - Sample System Measurements - Exhibit 5

Using a Hewlett-Packard 8753C network analyzer and a Tunwall Radio directional coupler, in a calibrated measurement system, impedance measurements were made of the antenna monitor sampling system. The towers were placed in an open circuited condition by removing the ATU output j-plug. The measurement equipment was connected to the antenna monitor end of the sample lines and measurements were made for two conditions. The first condition was with the sample line terminated in its associated Delta Electronics TCT sampler and the second condition where the sample line was open circuited by disconnecting the line from its TCT.

The following table shows the frequencies of the first and second resonances. As the length of a distortionless transmission line is 180 electrical degrees at the difference frequency between adjacent resonant frequencies, and frequencies of resonance occur at odd multiples of 90 degrees electrical length. The sample line length at the resonant frequency closest to the carrier frequency, was found to be 90 electrical degrees. The electrical lengths at carrier frequency appearing in the following table were calculated by dividing the carrier frequency by the resonant frequency closest to the carrier and multiplying by 90 degrees.

Tower	Sample Line Open-Circuited First Frequency of Resonance (MHZ)	Sample Line Open-Circuited Second Frequency of Resonance (MHZ)	Sample Line Calculated Electrical Length at 1100 kHz (Degrees)	1100 kHz Measured Z with TCT-3 Connected (Ohms)
1(NE)	.583544	1.761660	169.65	51.26 -j0.72
2(SW)	.581114	1.753383	170.36	51.7 +j0.813

The sample line lengths meet the specification that they be equal in length within one electrical degree.

The Characteristic impedance was calculated using the following formula, where R1 +jX1 and R2 -jX2 are the measured impedances at the +45 and -45 degree offset frequencies respectively:

$$Zo = ((R1^2 + X1^2)^{1/2} \bullet (R2^2 + X2^2)^{1/2})^{1/2}$$

Tower	+45 Degree Offset Frequency (MHz)	+45 Degree Measured Impedance (Ohms)	-45 Degree Offset Frequency (MHz)	-45 Degree Measured Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)
1(NE)	.87532	2.31 +j50.30	.29177	0.97 -j49.88	50.12
2(SW)	.87167	2.17 +j50.31	.29056	0.94 -j49.63	49.99

The sample line measured characteristic impedances meet the requirement that they be equal within 2 ohms.

The TCTs were calibrated by measuring their outputs with a common reference signal using a Hewlett-Packard 8753C network analyzer in a calibrated measurement system. The TCTs were placed side by side, bolted to a two inch wide piece of copper strap with a conductor passing the reference signal through them. The outputs of the TCTs were fed into the Channel A and Channel B receiver inputs of the 8753C, which was set up to measure the relative ratios and phases of the output voltages. The following results were measured for the carrier frequency, 1100 kHz:

Tower	Ratio	Phase (deg)	TCT Model #	TCT Serial #
1	Reference	+0.0000	TCT-3	1240
2	1.0050	+0.2154	TCT-3	1265

TCT-3 are 1.0 Volt/amp toroidal current transformers manufactured by Delta Electronics. These TCTs are rated for absolute magnitude accuracy of +/- 2% and absolute phase accuracy of +/- 3 degrees. The maximum measured transformer-to-transformer variation between the two was 0.5% and 0.22 degree, and as such provide far more accurate relative indications than could be the case within the manufacturer's rated accuracy.

KDRY - Reference Field Strength Measurements - Exhibit 6

Reference field strength measurements were made using a Potomac Instruments FIM-4100 meter, the meter being factory calibrated July 27, 2009. Measurements were made at three point locations along each monitored radial and along a radial thru the major lobe of the directional pattern. The following pages contain the measured field strength values, the GPS coordinates and point descriptions.

KDRY, 1100 kHz.

Nighttime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinat3.7 5es La1.30t. N	(NAD 83) Long. W	Description
26.0	1	2.74	7.69	29-34-48.7	98-21-48.3	NE corner of Topperwein & Spanish Earth.
	2	4.15	3.75	29-35-30.0	98-21-26.6	On Stahl Rd, across Stahl from pole #R5590.
	3	5.03	1.30	29-35-55.5	98-21-12.3	On Rolling Oaks Mall perimeter road, SW corner at 4' standpipe.
64.0	1	2.31	8.44	29-34-01.3	98-21-15.7	On Topperwein directly across from Advance Battery.
	2	6.35	4.28	29-34-56.2	98-18-59.5	Ratama Pkwy, at first “exit only” on the right.
	3	10.05	2.56	29-35-52.2	98-16-57.9	Starbucks 3rd space from dumpster at edge of TriCounty Rd.
225	1	2.59	178.0	29-32-30.8	98-12-40.7	Old dead-end of Schertz Rd at Thousand Oaks.
	2	4.83	85.0	29-31-38.1	98-24-39.7	Perrin-Beitel Rd in drivway to InTown Suites.
	3	7.31	58.3	29-30-41.8	98-25-44.8	Laurens Ln, back of corner house @ #2 Cheshire Ct.

KDRY - Direct Measurement of Power - Exhibit 7

Measurement of the Common Point Impedance for the Nighttime Directional pattern was made with a Hewlett-Packard 8753-C Vector Network Analyzer and a Tunwall Radio Directional Coupler. The analyzer was connected at the node directly adjacent to the common point current meter. The resistance value was adjusted with the common point matching network to provide the correct impedance at the authorized common point current value for each directional antenna pattern. The measured Common Point Impedance is R = 50.0 Ohms, X= -j 8.0 Ohms for Night operation. The common point current of 4.65 Amperes for Nighttime 1.0 kW was established.

KDRY operates Non-directional during daytime hours from Tower 2(NE). This has been the non-directional tower for a number of license renewal cycles. This tower supports the STL receiving antenna whose transmission line crosses the base insulator through a Kintronic Labs Model FMC-0.2 STL Iso-coupler.

Measurement of the non-directional Tower 2 base drive point impedance was made with a Hewlett-Packard 8753-C Vector Network Analyzer and a Tunwall Radio Directional Coupler. The analyzer was connected at the node directly adjacent to the Base Current meter. The measured impedance at this point is R = 51.7 Ohms, X = +j 66.1 Ohms for daytime Non-directional operation. The base current of 14.6 Amperes for Daytime non-directional 11.0 kW operation was established.

KDRY - Antenna Monitor and Sample System - Exhibit 8

KDRY utilizes a Potomac Instruments AM-1901 antenna monitor. The antenna monitor is provided an ATU output sample over equal length (see Exhibit 5) sample lines from Delta Electronics Toroidal Current Transformers, model TCT-3, that provides 1.0 volt per ampere. The sample lines are 1/2 inch foam dielectric coaxial cable (LDF4-50). Equal length pieces of RG-58 cable facilitate connection to the antenna monitor in the equipment rack. These pieces of RG-58 were included in the calibrated measurement of the sample lines.

The Potomac Instruments AM-1901 Antenna Monitor, Serial Number 778, was most recently factory calibrated in September, 2008.

The calibration of the PI-AM1901 was verified by comparing the tower current ratio and phase, at the carrier frequency, using a Hewlett-Packard 8753C network analyzer. The carrier reference signal, supplied by the analyzer was amplified and fed into the common point of the nighttime directional antenna. The network analyzer was calibrated using the internal calibration function at the time of measurement.

For the nighttime directional case, Tower 1 (ref) sample line was connected to the analyzer "B" receiver port and Tower 2 sample line was connected to the analyzer "A" receiver port.

The measurements of the antenna monitor ratio and phase were made immediately upon applying full authorized power to the nighttime directional mode after an adequate inactive period, so as to minimize the effects of system warming.

NIGHTTIME

Tower	Network	Analyzer	Antenna	Monitor
	Ratio	Phase	Ratio	Phase
1	1.0000	0.0000	1.000	-00.1
2	0.9605	-138.8	0.960	-138.9

The network analyzer and the antenna monitor agreed within the Potomac Instruments rated antenna monitor accuracy of 0.010 ratio and 1.0 degree phase.

KDRY - Radio Frequency Radiation Considerations - Exhibit 9

Operation of KDRY will not result in exposure of the workers or the general public to levels of non-ionizing energy in excess of the limits specified in 47 CFR 1.1310. Access to the transmitter site is restricted by locked perimeter fences. Each tower base is enclosed within a locked perimeter fence spaced greater than the distance specified in Recommended Guidelines. Warning signs are posted on the entry gate and on all four sides of each tower base fence. The signs state that a potential exists for possible exposure to hazardous R.F. energy. In the case where personnel must enter the tower enclosure fences, operation is switched to non-directional operation at reduced power or operation is ceased, in accordance with the KDRY RFR Plan.

KDRY - Statement of As Built Array Geometry - Exhibit 10

KDRY is an existing licensed facility. KDRY was constructed at the present location in 1982. The station has operated from this site with these tower locations since original construction. The instant application relies on the same theoretical field parameters and array geometry. The last Full Proof of Performance was filed in 1983.

KDRY is exempted from the requirement to submit a surveyor's certification, per FCC Public Notice DA 09-2340, dated October 29, 2009.